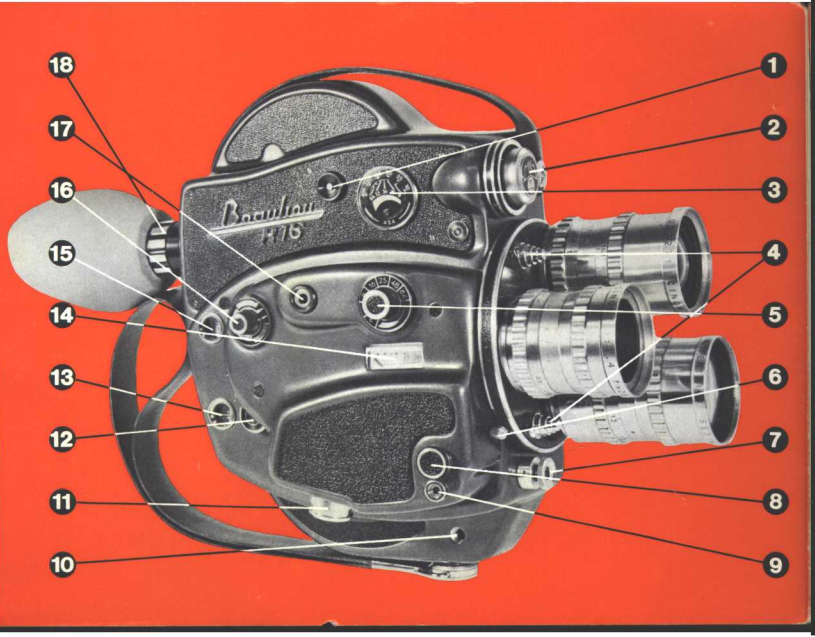
Beaulieu

RIG

RIG ELECTRIC

how to use your camera



1. checking of dry cells
2. battery case
3. ASA setting
4. turret actuating knobs
5. speed setting control
6. turret-locking pawl
7. trip press-button
8. sound sync socket
9. single frame release socket
10. grip handle fixing socket
11. battery supply socket
12. frame counter zero reset
13. frame counter
14. tachometer indicator
15. footage counter
16. master switch
17. remote trip
18. eyepiece adjustment

PRELIMINARIES

CHECKING OF ELECTRICAL SUPPLY

After reloading the camera, always check battery and cell voltages. With the BEAULIEU in-built metering facilities, this will soon become a matter of mere routine, easily and quickly performed.

CHECKING OF BATTERY SUPPLY

Connect the supply to socket **(A)** and lock.

Set master switch **(B)** to TEST position.

The pointer of dial **(C)** should deflect to within the red sector of the scale, and remain there (observe pointer for approximately 30 seconds). If the supply voltage is unsufficient, the pointer will remain within the white sector. In that case, replace the battery (see page 14).

CHECKING OF DRY CELLS

Set the master switch to NORMAL.

Press switch **(D)** fully home and look through the viewfinder. The photocell pointer should settle to the left of the vertical line of the cross-wires. If the pointer remains on the right of the line, replace the cell supply.

E

The battery case is mounted externally, so that cell replacement can be carried out on a loaded camera, without risk of spoiling the film. Proceed as follows: unscrew the cap **(E)**, remove the spent cells and replace with new ones. Make sure that the cells are inserted correctly—i.e., " + " side towards the cap.

The cells are always replaced in sets of two. Although continuously in service, celle current drain is practically nil when the camera is in darkness (in its bag or with lens cap on). The cells are rated for 2,000 hours service, but should be preferably changed every year even if the camera is not used during that period.

Use Mallory PX 13 type, purchasable from BEAULIEU Agents of from shops selling deaf-aid appliances.

MASTER SWITCH

For filming, set the master switch **(F)** to NORMAL. However, set the switch to stop if you do not intend to start filming immediately.

F

ADJUSTMENT OF VIEWFINDER

The eyepiece of the viewfinder will have to be adjusted to your eyesight. To do this, switch to tele-lens (or, if you use a zoom lens, set it to the tele position). Next, set diaphragm to maximum, with the focusing ring set to infinite.

Aim at an object situated at a distance of over 50 m, and adjust the eyepiece **(G)** until the object shows with maximum sharpness on the ground glass.

If you normally wear spectacles, you may for added convenience, take these off and adjust the eyepiece directly to your own eyesight (within tolerance limits of—2 and + 2 dioptrics).

SPEED SETTINGS-TACHOMETER

Two devices provide for accurate speed setting:

a) Control knob **(H)** for setting-in the required speed.

b) A tachometer indicator which enables accurate monitoring of speed.

The tachometer scale is etched with a series of dots corresponding to calibrated speeds—i.e., successively, from left to right.

1st dot : 8 fps
2nd dot : 16 fps
3rd dot (red) : 25 fps
4th dot : 32 fps
5th dot : 48 fps
6th dot : 64 fps.

The control knob **(H)** will be adjusted so that the tachometer pointer coincides with the required speed dot.

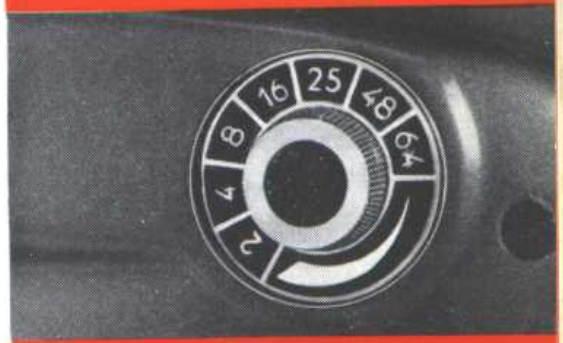
Normal filming speed is 16 fps.- 25 fps if sound-with-film is contemplated. Speed is readily variable during filming, subject to appropriate readjustment of the photocells.

IMPORTANT

1. Never run an unloaded camera at more than 32 fps.

2. There are no tacho-graduations for 2 fps and 4 fps. At such extremely low speeds, monitoring can be dispensed with.

G



H

FILM SENSITIVITY

Compensation for the different film sensitivities is achieved by bringing the speed setting marked on knob **(I)**, against the ASA value of the film. Use intermediate positions in the case of sensitivity ratings outside those marked on the camera.

I

IMPORTANT

When filming under conditions of exceptionally low luminosity, at very low speed (2 or 4 fps) and with films rating more than 200 ASA, always use a separate high-sensitivity exposure meter.

FILMING

LOADING

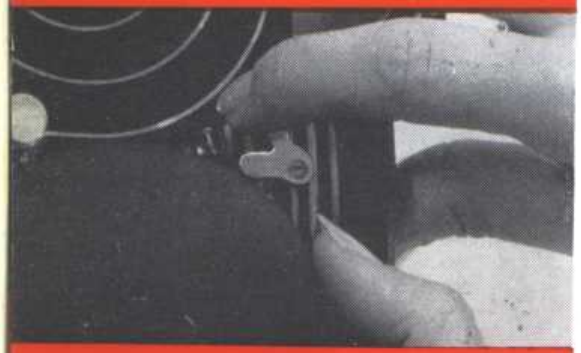
Loading will be carried out in conditions of subdued lighting, preferably in some dimly lit location or in a spot in the shade.

J

1. Unlock the camera's lid by turning the lock ring in the direction indicated by the arrow **(J)**.

Remove empty spool (supplied with camera)—before removing, see that zero-reset fork **(U)** is pulled clear of the spool. Retract pressure plate form film gate, as far as stop lug **(L)**.

2. Unreel some 12 inches of unexposed film and position the feeder spool on its spindle—check that the spool fits squarely into the square bush. Feed-out should be in the downward direction as indicated by the arrow. Retainer balls should lock into the inside flange of the spool.



3. Thread the film through the feed sprocket and guide—film perforations should engage on the corresponding teeth of the feed sprocket. Check this by giving a slight tug to the film.

K

Loop the film as indicated and insert into the film gate.

4. Leave the required amount of loop length after the film gate and thread the film through the take-up guide and sprocket (as described for the upper feed).
Place pressure plate back in position—if the film is positioned correctly, the pressure plate will fit flush against the gate. Pull the film lightly, up and down, and the drive claw will slip into a perforation and hold the film.

5. Insert the lead end of the film into the hub slot oft he take-up spool and wrap three or four turns over the hub. Check that the lead is securely held in the slot.

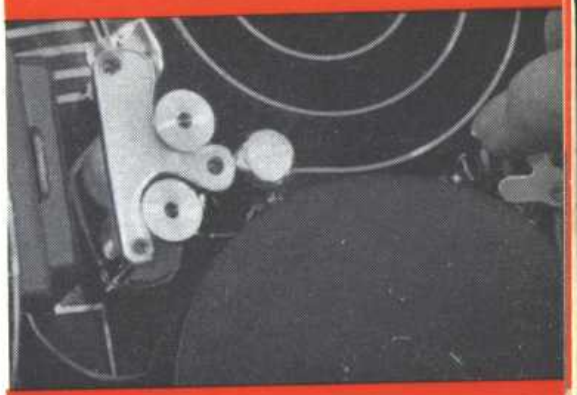
6. Keeping the zero reset fork out of the way, place the take-up spool on its spindle (square recess matching the square bush)—release the fork which will return to its working position, above and just clear fo the inner flange **(M)**. Press button and run a few inches of film length to check that the film transport system operates correctly (check that loop length is maintained and that the film remains on the feeder sprocket).

7. Close camera lid (incidentally, the lid will close only if the pressure plate is in position).

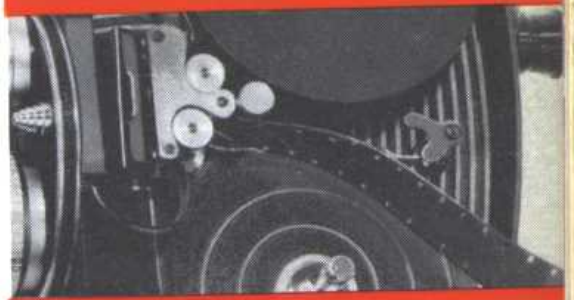
8. The film can now be run up to the point where the red lead section reaches the index of the footage counter.

IMPORTANT

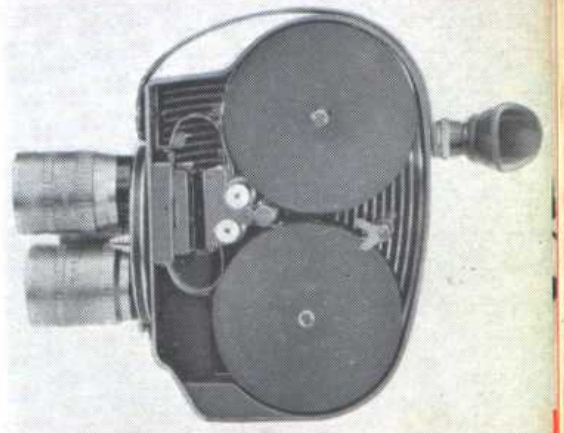
With some experience—and the help of the electric drive (at a speed of 2-4 fps)—loading can be achieved much more quickly by guiding the film, with the finger, against the film guideway.



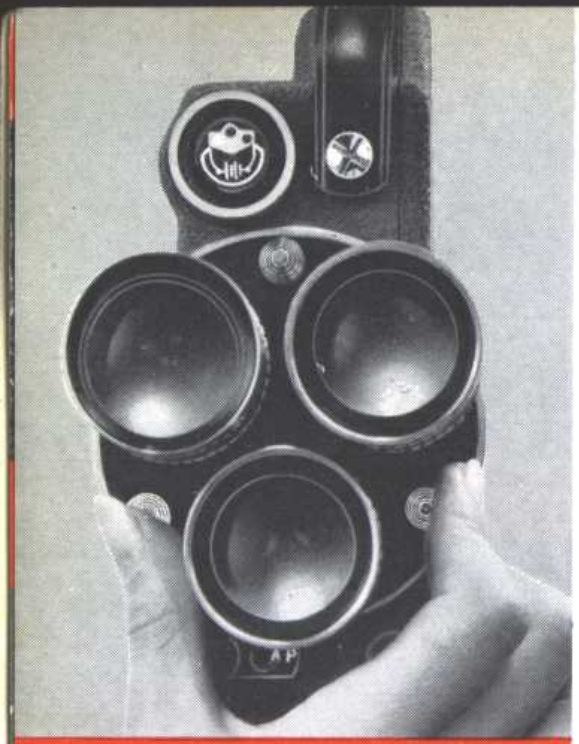
L



M



N



VIEWFINDING - FOCUSING AND FRAMING

The groundglass image of the subject to be filmed should be sharp. Rotate the lens focusing ring until the object is viewed with maximum sharpness.

Focusing should preferably be carried out with the diaphragm set for maximum aperture. If the camera is equipped with a zoom lens, use the tele-setting. Groundglass focusing combines the davantages of precise framing, accurate focusing and appreciation of field depth for different stop settings. It enables perfect image control for special effects and artistic softening.

LENS COMPLEMENT

O

The BEAULIEU 16 models are equipped with a three-lens turret fitted with three actuating knobs.

Lens switching is performed as follows:

Release turret by pressing on the locking pawl and rotate the turret by means of the three actuating knobs **(O)**.

Release the indexing pawl and continue rotating until the next indexing point is reached **(P)**.

One of the three lenses will then be automatically locked in the operating position (top lens **(Q)**.

The standard lens complement should theoretically satisfy all requirements. It includes:

- a normal lens (medium focal length of 25 mm)
- a wide angle lens (short focal length)
- a tele-cine lens (long focal length, approximately 75 mm).

P

However, the turret will accept all lenses of standard thread and extension size without the need for prior correction, as long as the length of rear threading, ar maximum range setting (infinite), does not exceed 3.8 mm.

BEAULIEU 16 cameras also accept a single variable focal length objective (zoom, Pan-cinor, etc)—however, with these, as with the larger-size tele-cine lenses, the turret must be secured by means of a threaded plug which screws in the place of the intermediate lens **(R)**. This takes up the strain and prevents turret warping. Special turret reinforcement is available, on request, for extra heavy lenses.

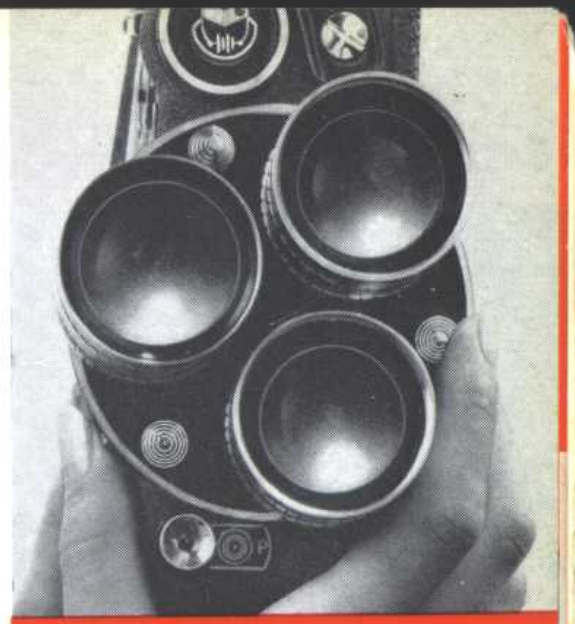
CAMERA HOLDING

a) Camera without pistol grip.

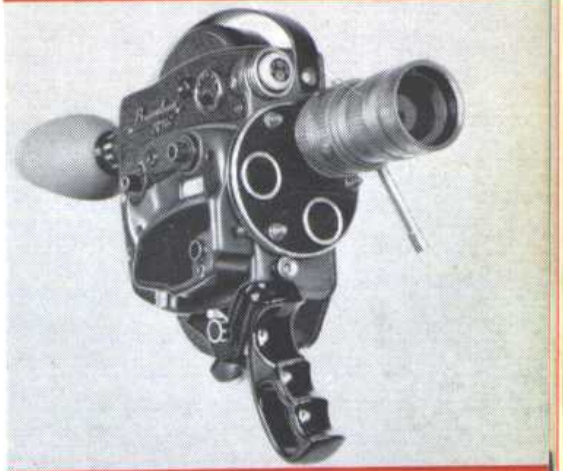
b) Camera with pistol grip attachment.

A black polyester pistol grip of functional shape facilitates camera holding—the grip screws into the brass bush **(S)** located on the side of the bottom section of the camera.

The attachment makes it possible to retain the wrist strap in order to steady the hold. The grip is locked in position by means of a small clamp lever.

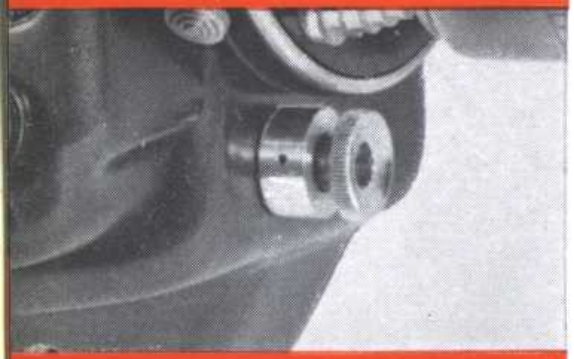


Q



R

S



DIAPHRAGMING

Aim the camera at the scene which you wish to film. Bring the view-finder pointer into coincidence with the vertical cross-wire by means of the diaphragm control ring.

You may now start filming.

T The reflex photocell, placed behind the lens, automatically compensates for differences in luminosity and therefore enables use of all cine and photo lenses and filters.

Table of exposure time for different filming speeds (assuming the built-in photocell is not used):

2	fps	= 1/5	seconds
4	fps	= 1/10	seconds
8	fps	= 1/20	seconds
16	fps	= 1/40	seconds
25	fps	= 1/62	seconds
32	fps	= 1/80	seconds
48	fps	= 1/120	seconds
64	fps	= 1/160	seconds.

START-STOP CONTROL

a) Trip button:

U Press trip button **(T)** and hold while filming (momentary trip). For prolonged shoots, press button and twist (quarter turn) to lock. To unlock and stop filming, press and twist back one quarter turn.

b) Flexible trip:

A flexible trip cable is supplied with the camera. It screws into the threaded trip insert. Momentary or continuous run is controlled by the cable-termination knob. The footage counter **(U)** indicates the length of exposed film, in metres (top scale) or in feet (bottom scale).

The counter is automatically reset to zero at the time of loading.

The frame counter **(V)** is graduated from 0 to 100—zero-reset is achieved by means of a special knurled knob **(W)**.

UNLOADING

Appearance of the letter " F " in the footage counter window indicates completion of useful film length.

Run the film until the " F " mark reaches the end of the scale. Continue to run the film until it is completely reeled in the take-up spool, free of the take-up sprocket (never pull the film out of the sprocket, as this might tear the film and fragments might fall into the drive mechanism). To take out a partly exposed film—e.g. in order to switch to a diffreent type of emulsion—remove the film guide (pull out squarely, holding both ends of the guide).

V

W

AFTER USE

Never leave the master switch set to TEST, as this would cause battery discharge. Get in the habit of resetting the switch to STOP, after filming and before placing the camera in its case.

SPECIAL EFFECTS

REVERSE DRIVE

Before using the reverse drive, check that the cap is duly fitted over the lens. The reverse drive actuates the shutter mechanism and, consequently, second exposure would result if the lens were not obscured. Set the master switch to REVERSE, actuate the trip button and check the amount of film reeled up, on the frame counter.

To resume filming reset master switch to NORMAL and remove lens cap.

IMPORTANT

Reverse drive can take place at any desired speed. Reverse filming is equally feasible.

SINGLE-FRAME FILMING

Animated cartoons or accelerated reproduction of phenomena which normally take place over prolonged periods of time, call for single-frame filming, which necessarily demands the use of a tripod stand and of a flexible trip cable **(X)**. Single-frame exposure are:

2 fps = 1/5 seconds
4 fps = 1/10 seconds
8 fps = 1/20 seconds
16 fps = 1/40 seconds
25 fps = 1/62 seconds
32, 48 and 64 fps = 1/80 seconds.

IMPORTANT

Do not lock the flexible trip on the continuous drive position when taking single-frame pictures.

REMOTE TRIP

Remote trip facilities are provided for "candid" camera work (e.g. for filming children at play, wild life, etc.) or for use when the camera is operated in hazardous locations (filming of wild animals, of speed track events, recording of dangerous acrobatics or of scientific experiments).

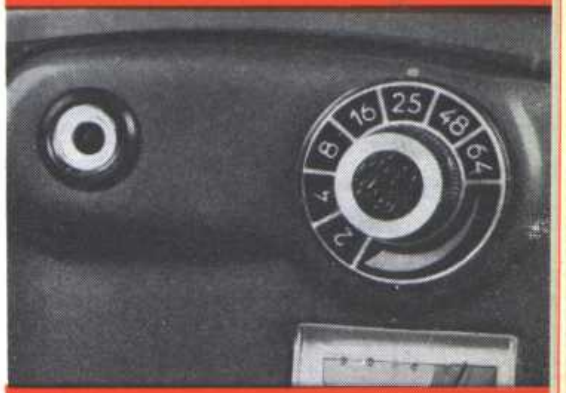
CABLE LINK

Any 2-conductor cable will serve the purpose. The cable will be terminated with a suitable switch at one end, and a jack plug at the other.

a) Plug jack into special camera socket **(Y)**

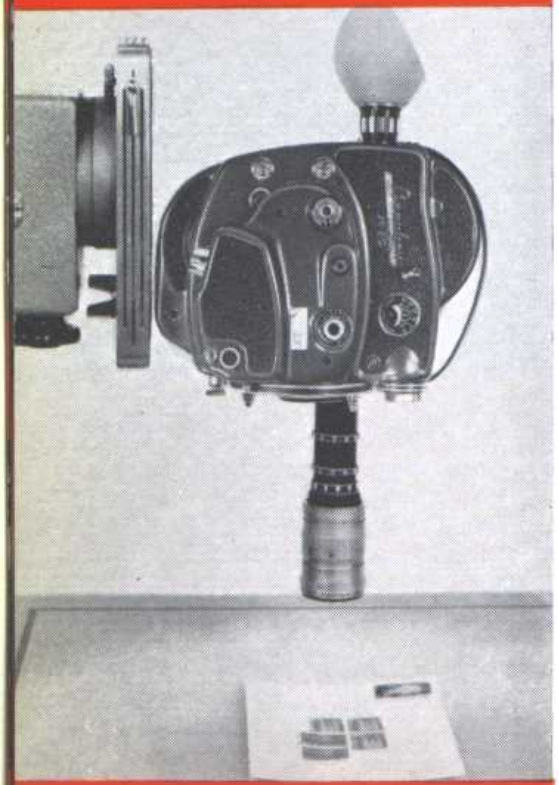
b) Lock trip button for continuous run

c) Control by means of the cable switch—maximum cable length: 200 m.



Y

Z



A'

RADIO LINK

Any radio control transmitter-receiver equipment will serve the purpose.

A single-channel link will be sufficient.

a) Connect the receiver jack plug to the camera socket.

b) Lock trip button for continuous run.

c) Control camera drive by means of the transmitter set.

Link range depends on the power of the radio equipment. Some preliminary trials are advisable.

IMPORTANT

With remote control, the camera may stop on either position—shutter-closed or shutter-open—whereas, with normal control, the camera always stops on the shutter-closed position.

SOUND-SYNC COUPLING

The BEAULIEU camera is equipped with a mechanical sync adapter **(Z)** geared for one revolution per frame. The adaptor can be coupled to a sync unit for use with a suitable sound recorder or projector.

MICRO AND MACRO CINEMATOGRAPHY

The BEAULIEU reflex-viewing system proves invaluable in this type of work because it provides the degree of focusing and framing accuracy, and the appreciation of field depth required by such applications.

For macro-cinematography, BEAULIEU offer a special set of five extension tubes ranging in length from 5 mm to 50 mm. Adaptor rings **(A')** provide for attachment of the tubes to the lens and camera turret, respectively.

The tubes are equally utilisable for micro-cinematography, tube size depending on the desired degree of magnification. One end of the tube is coupled to the camera (in the case of the lens) and the other is adapted to the ocular of the microscope, by means of a special adaptor ring **(B')**.

Focusing is achieved directly on the viewfinder groundglass.

Built-in light sensing does away the need for tedious computation of diaphragm corrections. For macro-cinematography, diaphragming is performed, as in normal filming, by adjusting the top ring until the viewfinder pointer coincides with the cross-wires. For micro-cinematography, the pointer is brought to the cross-wires by adjusting the light source of the microscope.

MAINTENANCE

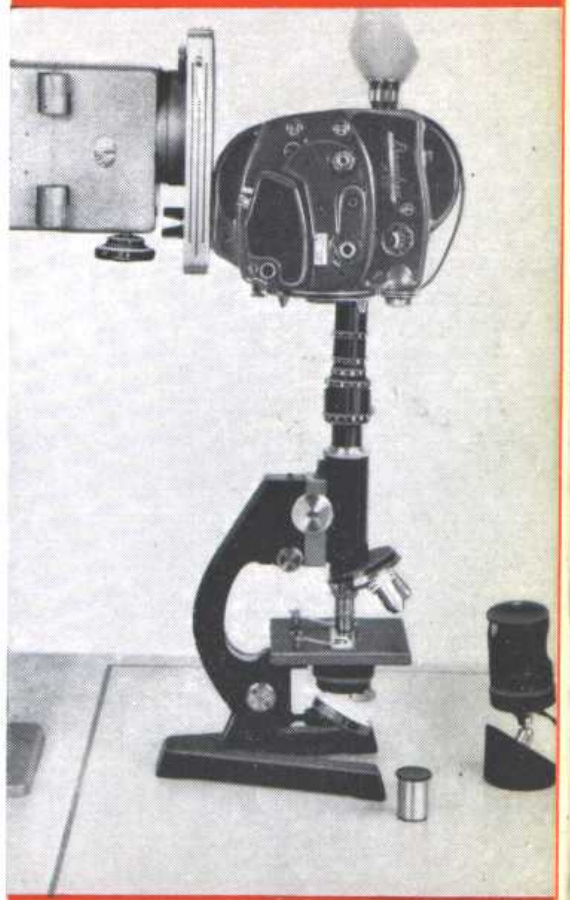
Lenses must be kept in condition of utmost cleanliness. Wipe lens faces with a fine lint-free rag—the rag should never be damp.

After cleaning, replace cap on lens.

GATE

Clean at frequent intervals (every third of fourth spool) with the brush supplied with the camera.

Ample clearance for cleaning is allowed by pulling back the pressure plate. The feed and take-up mechanism will be easily cleaned once the guideway is removed (detached by pulling squarely out of the case).



B'

REFLEX SYSTEM

To remove dust from the surface of the mirror or from the groundglass, unscrew the lens and clean the mirror with the hand blower. Then, bring the mirror to the lower position by turning the feed sprocket in either direction. Clean the groundglass with the hand blower. Be careful not to scratch the mirror or groundglass with the hand blower.

LUBRICATING

In theory, lubricating should be performed by us. After a period of three years, the camera should be returned to a BEAULIEU Agent, for routine maintenance, inspection and lubrication.

POWER DRIVE BATTERIES

The electric drive motor is powered by 7.5 volts cadmium-nickel batteries, rechargeable on 110/220 volts AC line supplies, in the following manner:

- connect the battery to the charger (supplied with the camera) via the power cable,
- connect the charger to the AC line outlet.

IMPORTANT

Connect the batteries to the charger before connecting the charger to the AC line supply.

When disconnecting, first disconnect the charger from the AC line supply and, next, disconnect the battery.

- Batteries—" professional type " capacity sufficient for 50 films at 16 fps. Charging time:
220 volts = 16 to 17 hours.
110 volts = 32 to 34 hours.

- Pocket type—capacity for 7 films at 16 fps. Charging time:
220 volts = 12 hours.
110 volts = 24 hours.

CARE OF BATTERIES

Keep the batteries in good charge conditions. During off-duty periods, a monthly charge will maintain the battery in good service condition. Don't hesitate to recharge the battery after each shoot, even if utilised only to part capacity—there is no risk of overcharging the battery.

Never leave the batteries in condition of total discharge. This would rapidly lead to permanent damage.

DRY CELLS

See page 1.

SERIAL NUMBER

The serial number of the camera (to be quoted in all dealings with your BEAULIEU Agent) is visible under the camera, next to the wrist strap bush.

ELECTRICAL SPECIFICATIONS OF THE BEAULIEU R 16

AMPS-VOLTS RATINGS

DC supply

The amount of current drawn by the camera depends necessarily on filming speed, and may vary from:
300 milliamps at 2 fps to
700 milliamps at 64 fps.

The normal supply voltage is 7.2 volts (but up to 8 volts may be safely accepted). The Beaulieu R 16 may be operated on 6 volts supplies (car batteries), though only at speed settings of 4 fps to 32 fps. (Lower voltages are acceptable, but the range of utilisable speeds will be correspondingly limited and the speed settings marked on the control knob will no longer apply. Tachometer monitoring will be necessary.)

Rectified current

Never operate the camera on A.C. line supplies, even through a step-down transformer. The current must be rectified into D.C. and very carefull smoothed.

TERMINAL-PIN LAYOUT

Supply imput receptacles are marked for correct polarity:
Positive terminal: pin no. 3.
Negative terminal: pin no. 1.

DRY CELL SUPPLY

All cell types can be used to power the camera as long as they can deliver 300 to 700 milliamps, depending on filming speed.

BATTERY CHARGING

Important: always connect the battery to the charging unit before connecting the unit to the A.C. line supply. Converseley, always disconnect the charging unit from the A.C. line supply before disconnecting the battery from the charger.

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follow the advice of your Beaulieu cinema agent when you "think movies"

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